

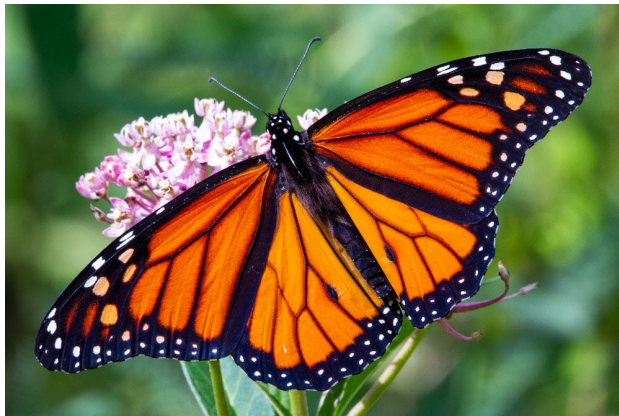


Insect Discovery  
**MAKING A MONARCH GARDEN**  
Lesson Plan – Insect Science Educational Supplements



The monarch butterfly (*Danaus plexippus*) is one of the most recognized and beloved butterflies in North America. These butterflies are famous for their beautiful black and orange coloring, their fondness for eating milkweed (that is poisonous to most insects) and their amazing 3000 mile migration. Sadly, the monarch butterfly is in decline due to habitat reduction and climate change. There are many learning activities that incorporate butterfly biology, art and conservation. Here are some Arizona-specific resources for 4-H and teachers.

**Know your Monarchs and Queens.** In Arizona gardens, monarch butterflies are often seen together with another butterfly species, the Queen butterfly (*Danaus gilippus*). Both species like to feed on milkweed as caterpillars. Both are great pollinators to invite into your garden.



Monarch adults (left) are bigger, with dark black veins on their wings. They also have some cream-colored spots in the corners of their front wings. Queens (right) are smaller, with less dark veins and white spots only. Both species' caterpillars have yellow, black and white stripes as well as pairs of long black 'tails' at each end. The Queen has an extra set of black tails in the middle.



Monarch caterpillar (Photo by Fred Goodwin)

Queen caterpillar (Photo by Alan Chin Lee)



**Preparation:** The first step to create a monarch garden is growing the milkweed plants from seeds. Milkweeds are perennials in the genus *Asclepias*. There are many different native species in Arizona. It is not recommended to buy tropical milkweeds plants from a nursery. They are lovely, but in some parts of the United States these non-native plants can carry a parasite that can hurt the caterpillars. Instead, purchase native seeds that will grow well and maybe spread to create more monarch butterfly habitat. To determine which milkweed species to grow, see the monarch map. Low and mid-elevation desert areas are shown in yellow (L). High desert and plateau are shown in green (M). Mountains are in blue (H). Seeds can be purchased at low cost from

<https://www.nativeseeds.org>

Arizona region			Milkweed species	Scientific name
L	M	H		
x	x		Arizona milkweed	<i>Asclepias angustifolia</i>
x	x		Antelope horns milkweed	<i>Asclepias asperula</i>
x	x		Broadleaf milkweed	<i>Asclepias latifolia</i>
	x	x	Butterfly weed	<i>Asclepias tuberosa</i>
	x		Horsetail milkweed	<i>Asclepias subverticillata</i>
x	x		Mohave milkweed	<i>Asclepias nyctaginifolia</i>
	x	x	Showy milkweed	<i>Asclepias speciosa</i>

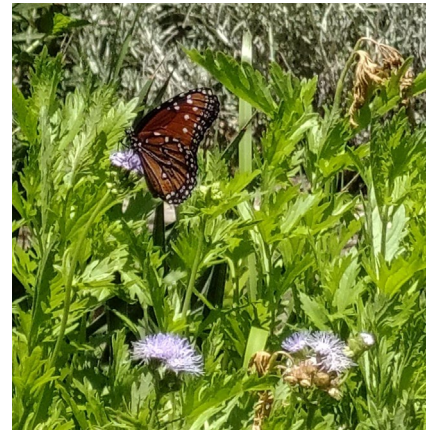
Map and table from Morris et al. 2015. For information on growing these native milkweed species, see the last page of the lesson plan.

**DO - Activity:**

1. *Starting the milkweed plants.* Once you have the seeds, potting soil and small pots or seed trays, you can lead the group in a seed planting activity. It will take at least 4 to 6 weeks for the plants to be big enough to plant outside. This can be an appropriate early spring activity throughout the state or can be a fall activity in south and central Arizona.
2. *Planting the monarch garden.* You will need a garden area (preferably protected from strong afternoon sun) with access to a hose for irrigation. Do NOT place the garden in close proximity to an alfalfa field, as milkweed plants spread their seeds and you don't want toxic milkweed plants interspersed with the alfalfa! In addition to planting the milkweed seedlings, you should plant flowering plants that will attract butterfly adults. In south and central Arizona, an excellent, easy to grow flower that is highly attractive to monarch and queen butterflies is the **Blue Mist Flower** (sold in many nurseries as

*Conoclinium dissectum* or *Eupatorium greggii*). Once the blue mist flower plants are established, it is easy to dig up rooted stems and plant them in other gardens.

3. *Observing the monarch garden.* Once established, the monarch garden should attract caterpillars and adults of both Monarch and Queen butterflies, as well as other butterfly species. Late spring and early fall are especially good times to find them. You can do a weekly butterfly census and keep track of caterpillar and adult butterflies. Here is a queen butterfly feeding on blue mist flowers in a Tucson garden.



## REFLECT

Watch this short section of a National Geographic video on monarch migrations.

<https://www.youtube.com/watch?v=sMs-ICaTKoE>

What questions does this film raise? The monarch migration is an amazing phenomenon, and scientists still don't know exactly how the butterflies find their way. The film also raises questions about human culture and gives a beautiful glimpse of the Mexican Day of the Dead tradition. This can be a great starting point for talking about butterfly symbolism. In many cultures, including in the United States, butterflies are used as symbols of the soul and life after death.

## APPLY

The native milkweed plants are vital to the survival of Monarch and Queen butterflies. When the milkweeds produce seeds, students can try growing seeds for their home gardens, or even take the seeds on hikes and try scattering them in wild areas.

## Other Resources:

Great general monarch information

<https://www.nationalgeographic.com/animals/invertebrates/facts/monarch-butterfly>

## Monarch conservation and citizen science projects

<https://monarchjointventure.org/get-involved/study-monarchs-community-science-opportunities>

## References:

Gail M. Morris, Christopher Kline & Scott M. Morris. 2015. Status of *Danaus plexippus* in Arizona *Journal of the Lepidopterists' Society* 69(2), 2015, 91–107





## BORDERLANDS RESTORATION

# Native Milkweeds

Wild collected seed from the Borderlands  
Native Plant Materials Program

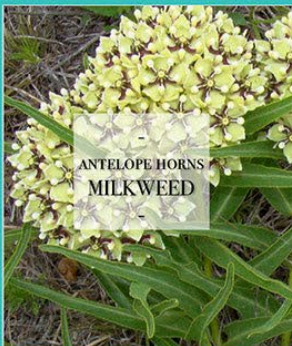
Our mission is to promote biodiversity by providing access to restoration-quality native plant materials. Native plants have edible, medicinal, and aesthetic value and support basic ecosystem function. We seek to heal the land and ourselves by exploring a culture of place, centered on a rich relationship with our native flora.

Nuestra misión es promover la biodiversidad proporcionando acceso a restauración de calidad con materiales de plantas nativas. Las plantas nativas tienen valor estético, son comestibles y medicinales, a su vez aportan funciones básicas del ecosistema. Buscamos sanar la tierra y a nosotros mismos, explorando la cultura del lugar, enfocándonos en una relación rica con nuestra flora nativa.

Every packet contains 25-50 seeds. See more seed availability online at [www.borderlandsrestoration.org](http://www.borderlandsrestoration.org)



*Asclepias speciosa* or “showy milkweed” is a perennial plant that can grow up to 3ft tall and produces clusters of charismatic pink and white flowers between June-August. The native habitat for this milkweed species is in woodland and riparian areas, between 5,000-8,000ft. The showy milkweed attracts many types of pollinators and is a larval host species for queen and monarch butterflies. Plant in full sun to partial shade.



*Asclepias asperula* or “antelopehorn milkweed” grows up to 2.5 ft. tall and has broader leaves and larger umbel inflorescences than the *Asclepias angustifolia*. It blooms between April-September. This milkweed prefers arid areas between 2,500-8,500 ft. This is a host plant for monarch and queen butterfly larvae. Plant in partial to full sun, wet to dry conditions. Experiences transplant shock due to tuberous roots, but will re-sprout in winter/spring.



*Asclepias tuberosa* or “butterfly milkweed” grows up to 3 ft. tall and has slightly narrow, fuzzy leaves and unbranched stem, except at the flowers. The bright clusters of yellowish-orange flowers can be seen blooming from May-September. This versatile plant grows in pine and riparian woodlands, prairies and disturbed areas between 3,000-8,000 ft. This is a host plant for monarch and queen butterfly larvae. Plant in partial shade in moist soil.



*Asclepias latifolia* or “broadleaf milkweed” can grow up to 2.5 ft in prairies, rocky slopes, and roadsides in desert and grassland habitats between 2,500-7,000 ft in elevation. It has unbranched, wooly stems and large leaves that extend upward. The cream colored to yellowish green flowers appear on the terminal end of the stems and along the axis between leaves between July-October. It is a host plant for monarch and queen butterfly larvae. Plant in partial to full sun, wet to dry.



*Asclepias nyctaginifolia*, or “Mojave milkweed” is a very low-growing milkweed that is found in disturbed soils along roadsides, in desert washes and in open grassland and woodland habitats between 1,600-6,500 ft. This host plant for monarch and queen butterfly larvae has broad, lanceolate leaves and large clusters of cream-colored flowers which bloom from April-October. Plant in partial to full sun, wet to dry conditions.



*Asclepias angustifolia* or “Arizona milkweed” grows up to 2 ft. tall in riparian woodlands, canyons and mountains between 3,500-7,500 ft in elevation. Its clusters of white flowers can be seen in bloom between May-September. This is a host plant for monarch and queen butterfly larvae. Transplants well due to its fibrous root system; plant in clay or silty soils. Tolerates a wide variety of conditions but performs the best in partial shade.



*Asclepias subverticillata* or “horsetail milkweed” grows up to 4 ft. tall and has very narrow, whorled leaves. It prefers disturbed habitats such as roadsides, sandy flats, or grasslands between 3,000-8,000 ft. in elevation. Its cream-colored flowers bloom between June-September. This is a host plant for monarch and queen butterfly larvae. Plant in partial to full sun, wet to dry conditions. Transplants well due to its fibrous root system; plant in any soil type. Tolerates standing water.